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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/763,138	04/20/2001	Volker Becker	10191/1711	3830

26646 7590 03/31/2003

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EXAMINER

SCHILLINGER, LAURA M

ART UNIT PAPER NUMBER

2813

DATE MAILED: 03/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	09/763,138		BECKER ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Laura M Schillinger		2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 January 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 18-34 is/are pending in the application.
- 4a) Of the above claim(s) 29-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6</u> | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

**This Office Action is in response to the Election made in Paper No.1, dated 1/6/03.**

#### ***Election/Restrictions***

Claims 29-34 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected claims, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 10. Applicant argues that the Examiner's restriction requirement is improper under the lack of unity rules. The Examiner disagrees. Applicant's claims 18-28 pertain to a method and device for etching a patterned silicon body substrate. These claims are being examined as elected claims. However, Applicant's claims 29-34 lack unity because they pertain to a device and method for igniting plasma and adjusting upward or pulsing plasma power. Consequently, the two sets of claims lack unity and claims 29-34 are hereby withdrawn.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 18-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Collins et al ('501).

In reference to claim 18, Collins teaches a device comprising:

A plasma source for generating high frequency electromagnetic alternating field power to be applied to the plasma source with assistance of a high frequency generator (Col.11, lines: 25-40);

A reactor for generating the plasma from reactive particles through the action of the high-frequency alternating field upon a reactive gas or a reactive gas mixture (Abs., lines: 1-15);

And a first means for producing a periodical change in the high-frequency power applied to the plasma source (Col.4, lines: 55-65).

In reference to claim 19, Collins teaches wherein the first means is a component for controlling the power of the high-frequency generator in which component a digital ramp generator is programmed via a software, or a component for controlling the power of the high-frequency generator which component has an analog ramp generator (Col.4, lines: 25-45).

In reference to claim 20, Collins teaches wherein the analog ramp generator has an RC circuit which is provided with at least one diode (Col.20, lines: 15-30).

In reference to claim 21, Collins teaches further comprising a second means which, during the periodical change in the high-frequency power applied to the plasma source, at least temporarily adapts the output impedance of the high-frequency generator to the prevailing impedance of the plasma source which changes as a function of the high frequency power (Col.18, lines: 25-50).

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In reference to claim 22, Collins teaches wherein the adaptation of the output impedance is carried out continuously or stepwise and is automated and wherein the applied high frequency power lies between 400 and 5000W (Col.22, lines: 45-65).

In reference to claim 23, Collins teaches wherein the second means is an impedance transformer (Col.18, lines: 25-50).

In reference to claim 24, Collins teaches a method comprising: the steps of carrying out the anisotropic etching process in separate etching and polymerization steps alternatingly following each other and applying a polymer to lateral patterns defined by an etching mask during the polymerization steps, the polymer being removed again in each case during subsequent etching steps wherein during the etching steps at least temporarily, and in each case higher high-frequency power is applied to the plasma source than during the deposition steps (Col.13-14, lines: 60-15).

In reference to claim 25, Collins teaches wherein during the etching steps at least temporarily, a high-frequency power of 800W to 5000 W in particular of 2-4kW is applied to the plasma source, and during the deposition steps, at least temporarily, a high frequency power of 400-1500 W in particular 500-1000 W is applied to the plasma source (Col.22, lines: 45-65).

In reference to claim 26, Collins teaches wherein the increase in the high-frequency power during the change from the deposition steps to the etching steps or the decrease in the high-

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frequency power during the change from the etching steps to the deposition steps are carried out stepwise or continuously (Col.13-14, lines: 60-15).

In reference to claim 27, Collins teaches wherein at least the increase in the high-frequency power is carried out in such a manner that during this time at least temporarily, the impedance of the high-frequency generator is adapted to the plasma impedance at least approximately in a continuous or stepwise and automated manner via the second means, the impedance transformer (Col.18, lines: 20-50).

In reference to claim 28, Collins teaches wherein the duration of the increase in the high frequency power during the change from a deposition step to an etching step is 0.2 sec to 5 sec in particular 0.5 to 3 sec and/or that the duration of the decrease in the high frequency power during the change from an etching step to a deposition step is 0-2 sec in particular 0 to 0.5 (Col.22, lines: 45-65 and Col.14, lines: 10-15).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura M Schillinger whose telephone number is (703) 308-6425. The examiner can normally be reached on M-T, R-F 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W Whitehead, Jr. can be reached on (703) 308-4940. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

LMS  
March 23, 2003

  
CARL WHITEHEAD, JR.  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800